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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,061	03/09/2005	Oliver May	266811US0XPCT	4748
22850 7590 11/16/2007 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER MEAH, MOHAMMAD Y	
			ART UNIT 1652	PAPER NUMBER
			NOTIFICATION DATE 11/16/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/527,061	Applicant(s) MAY ET AL.	
	Examiner Mohammad Meah	Art Unit 1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/17/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 22-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 5/17/07 has been entered. Claims 22-45 are pending for examination.

Priority

Acknowledgement is made of applicant's PCT priority date based on application filing date of 10/15/2003 of PCT/EP03/11432 and foreign applications Germany 102-51-184.5 filed on date 11/04/2002.

Claim Objection

Claim 38 objected to under 37 CFR 1.75 as being a substantial duplicate of claim 26. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 45 objected to under 37 CFR 1.75 as being a substantial duplicate of claim 33. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper

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after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections

35 U.S.C 112

Claim 31-32 and 40-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 31-32 and 40-44 rejected under 35 U.S.C. 112, second paragraph, as being indefinite in recitation the phrase "wherein the D-amino acid that is " make the claims unclear, it should be "wherein the D-amino acid that is recovered is ."

Previous rejections based on 35 USC 112 are withdrawn after amendment of claims and fulfillment of requirement of biological deposit.

35 U.S.C 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the

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international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 22-24, 27-30, 32 are rejected under 35 U.S.C. 102 (b) as being anticipated by Fotheringham et al. (US PAT 5728555).

Fotheringham et al. teaches E coli strain having mutated *dada* gene (claim 5-6) wherein said strain does not show D-amino acid oxidase activity (or *dadA* activity). They also used the said strain for the production of D-amino acids, like, D-phenylalanine, D-serine, D-methionine, D-tryptophan, etc (table 1). Fotheringham et al. teaches that *dadA* breaks down (col 5) D-phenylalanine (D-Phe) therefore mutation of said gene in organism reduced D-Phe breakdown. Since like applicants' Fotheringham et al. *E. coli* comprise mutated *dada* gene an skill artisan would believe that Fotheringham et al. *E. coli* comprising mutated *dada* gene would breakdown at least one D-amio acid bellow 10% level within 10 hrs. **CLAIM Rejection - 35 U.S.C**

103a

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25, 31, 34-36, 39-44 are rejected under 35 U.S.C. 103(a) by Fotheringham et al. (US PAT 5728555) and Altenbuchner et al. (US 6352848) in view of Marceau (JBC 1988, PP 16916-16933).

Fotheringham et al. teaches *E. coli* strain having mutated *dada* gene (claim 5-6) wherein said strain does not show D-amino acid oxidase activity. They also used the said strain for the production of D-amino acids, like, D-phenyl alanine, D-serine,,D-methionine, D-tryptophan, etc (table 1).

Altenbuchner et al. (US 6352848) teach recombinant microorganisms (such as *E.coli*,) expressed with hydantoins racemase and D- carbamoylase genes from *Arthrobacter* and methods of production D-amino acids using said recombinant microorganism.

Marceau et al. (JBC 1988, PP 16916-16933) teach the isolation of D-serine dehydratase (*DSDA*) from *E.Coli* and found that inactivating DSD in *E. coli* by mutating amino acid residues of DSD polypeptide decrease the degradation of D-amino acids (such as D serine, D-threonine, etc).

One knowledgeable in prior art is motivated to use the *E. coli* strain of Fotheringham et al. or Altenbuchner et al. and further mutate its *dsdA* gene in order to increase D-amino acid production by decreasing its degradation.

As such it would have been obvious to one of ordinary skill in the art to use the *E. coli* taught by Fotheringham et al or Altenbuchner et al. and modify the microorganism by deleting or mutating the *dsdA* gene as suggested by Marceau et al. to increase the production of D-amino acid.

Claims 37 is rejected under 35 U.S.C. 103(a) by Altenbuchner et al. (US 6352848) in view of Marceau (JBC 1988, PP 16916-16933) and Fotheringham et al. (US PAT 5728555).

Claims 37 is directed to E coli strain expressing hydantoins racemase and D-carbamoylase having mutated *dada* gene and *dsda* gene.

Altenbuchner et al. teach recombinant microorganisms (such as *E.coli*,) expressed with hydantoins racemase and D- carbamoylase genes from *Arthrobacter* and methods of production D-amino acids using said recombinant microorganism. Marceau et al. teach the isolation of D-serine dehydratase (*DSDA*) from *E.Coli* and found that inactivating DSDA in *E. coli* by mutating amino acid residues of DSDA polypeptide decrease the degradation of D-amino acids (such as D serine, D-threonine, etc). Fotheringham et al. teaches E coli strain having mutated *dada* gene (claim 5-6) wherein said strain does not show D-amino acid oxidase activity. They also used the said strain for the production of D-amino acids, like, D-phenyl alanine, D-serine,,D-methionine, D-tryptophan, etc (table 1).

One knowledgeable in prior art is motivated to use the *E. coli* strain of Altenbuchner et al. and further mutate its *dada* gene as taught by Fotheringham et al and *DSDA* gene as taught by Marceau et al. in order to increase D-amino acid production by decreasing its degradation.

As such it would have been obvious to one of ordinary skill in the art to use the *E. coli* taught by Altenbuchner et al. and modify the microorganism by deleting *dada* gene

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as taught by Fotheringham and mutating the *dsdA* gene as suggested by Marceau et al. to increase the production of D-amino acid.

Regarding claim 31 though Fotheringham et al. do not teach making D-aminobutyric acid using *E coli strain* having mutated *dada* gene (claim 5-6) wherein said strain does not show D-amino acid oxidase activity. In light of production of D-amino acids, like, D-phenyl alanine, D-serine,,D-methionine, D-tryptophan, etc (table 1) by the said *E coli* strain, one knowledgeable in prior art is motivated to use Fotheringham et al said *E coli* strain to make D-aminobutyric acid.

As such it would have been obvious to one of ordinary skill in the art to use the *E. coli* taught by Altenbuchner et al. and modify the microorganism by deleting *dada gene* as taught by Fotheringham and mutating the *dsdA* gene as suggested by Marceau et al. to increase the production of D-aminobutyric acid.

Conclusion

Claims 22-25, 27-32, 34-37, 39-44 are rejected and Claims 26, 33, 38 and 45 are allowable if they are made independent from the rejected claims.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Meah whose telephone number is 571-272-1261. The examiner can normally be reached on 8:30-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on 571-272-0928. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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Examiner, Art Unit 1652

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